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4-H 400 Water Riches for Youth : Citizen Workbook

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4-H 400



Citizen Workbook



4-H Youth Development
Cooperative Extension, Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln



Date _____

Your name, _____

Your title _____

Your business name _____

Business address _____

City _____

State _____

ZIP _____

Dear _____ :
Your name

As you probably are aware, our city's current landfill has been condemned and the city must build a new one and have it operational in 24 months. Because of this immediate problem, I am in the process of putting together a task force to help locate a new landfill.

I am asking you to serve on this committee. All the task force members will provide a balance of knowledge, insight and interest, you have a special interest in and knowledge of one neighborhood that could be affected by this decision. Your perspective will make you a unique and invaluable member of this team. I am also asking you to chair this task force.

Some of the ground work has already been laid for this task force. My office has narrowed the number of possible sites down to five. Once the task force has met and discussed all five sites, your committee will narrow the field to three, then two, and finally, to its final recommended site.

We hope this will be a rewarding experience for you. I feel it will be very beneficial to bring together a cross-section of professionals and citizens to help make this important decision. I thank you, in advance, for the time and effort you will put in to help your community in this way.

The first meeting of this task force will be _____.
Day, Date, Time, Location

If you have any questions, feel free to call my office at _____.
We look forward to meeting you at the first meeting. Your mayor's office phone number

Sincerely,

Mayor

You just arrived at work and opened the following letter. Congratulations! You are now part of a special project to help your community overcome a serious problem.

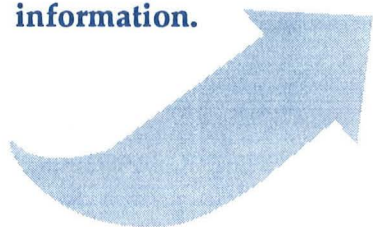
You live in this community. In real life, you may be a anyone, but for this program, your team is most interested in who you are as a resident of a particular neighborhood.

Because of that, you will use your home address in the return address area of this letter.



On any team, every team member has a different role. Your role is to help your team understand the physical, emotional and financial impacts of their decisions.

Read this carefully to discover your inside information.



You are the only member on your team receiving this information.

The Role of the Citizen

On this team, you are a citizen who could be directly affected by the placement of the new landfill. You are very important in making this problem-solving activity realistic. In this activity, you represent the real people who have to live with the decisions made by the leaders in our communities, our states and our nation.

For this exercise, you are to assume that you will live near site A. As you work through this process, keep in mind how the selection of a site will effect you and your neighbors..

This activity will force you to think seriously about:

- how the public policy-making process works,
- how you can influence the policy-making process,
- how a landfill in your neighborhood might affect you,
- how a landfill can affect groundwater supplies,
- long-term and short-term consequences of policy decisions.

Overview

Welcome to *Water Riches for YOUth!* You're going to find this a different kind of learning activity, so pay close attention.

This situation involves locating a new landfill in your community from among five sites. Careful consideration must be given to this issue. Your team must consider a variety of social, economic, political and environmental issues when determining which site to recommend.

You have been asked to serve on a community task force. The mayor's letter identified a serious problem with the landfill and a solution must be found.

As a member of this task force or team, you will take the role of a community resident with particular views and perspectives of the problem. The different ideas from the team members will help reach the best decision.

If you don't understand how this activity works, you're going to have trouble as a team, so please:

- READ** this workbook carefully,
- THINK** about your responsibility to your group, and
- PERFORM** your role so your group can work effectively.

This workbook will guide you through interesting team problem-solving activity.

NOTE: You are the **ONLY** member of your team receiving the information contained in this workbook. You need to understand your role and the information in this workbook.

Remember, a team is only as good as its weakest member. Do the best job you can — that's all your team asks.

Here's How This Activity Works

◆ Study the Sites

Your teacher will provide site sheets with basic data and maps.

Study the information provided. Ask questions. Search for other additional information that will help to make a decision. Look for long-term and short-term impacts of different decisions. Talk to experts in your community to help you gather information. You may have to make assumptions or guess about how the sites might be used and the environmental threats at the sites.

◆ Group Meetings

Your group will alternate between GROUP MEETINGS and INDIVIDUAL WORK SESSIONS. Your teacher will help you get the first group meeting underway, and may call additional meetings from time to time when necessary.

The Team Leader will call the group meetings.

During the group sessions, you will discuss which landfill site to select. When your team seems ready (has discussed the issues, looked at options, weighed the trade-offs of each site), you may call for a vote to determine the end of one round and the beginning of the next round. At the end of each meeting you'll need to complete the questions at the end of your workbook and discuss how your team is working.

◆ Rounds

During Round 1, all five sites will be discussed, and a vote will be taken to decide which three sites to continue discussing.

During Round 2, three sites will be discussed, and a vote will be taken to decide which two sites to continue discussing.

During Round 3, two sites will be discussed and a final vote will be taken to decide which site the group supports.

◆ Individual Work Sessions

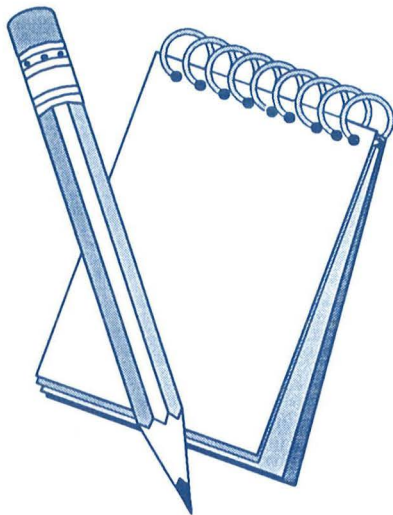
During the individual work sessions, each team member will work from his/her workbook, will work to find answers to questions that arose during the previous group session, and will work on the laboratory experiences and special activities the teacher may assign.

◆ Your Unique Role

Each person has a specific role, different from the others on the team. Read about the group problem. Talk with your parents and others in the community for ideas. Participate in the meetings as you think someone in your role would act.

REMEMBER: You may hold more than one group session during a round!





NOTE: A round is not necessarily limited to a single meeting!

Moving Through the Rounds

Be Prepared!

One of the best ways to approach a problem-solving activity is to come to the meetings **prepared**. By writing down what you want to accomplish, when, how and who should be involved, you will help the group find workable alternatives and solutions.

Use the worksheets provided by the teacher. They will help you organize the presentations you bring before your team.

This group problem-solving activity will take place in three rounds. Round 1 will begin only after the teacher and team leader believe everyone is ready. Rounds 2 and 3 will be called in that same manner.

If team members need more time to gather information or ask more questions — either individually or in group discussion — the round continues. **A ROUND ENDS ONLY AFTER A VOTE IS TAKEN!**

ROUND 1:

- The group will meet to discuss the features, advantages and disadvantages of each of the five possible sites for the landfill.
- Before closing Round 1, the group will **VOTE** to continue studying **THREE** sites.

Since you may want to keep the landfill away from your neighborhood, you will probably want to enter Round 1 with strong reasons why a particular site might be better than others.

ROUND 2:

- Discuss the advantages, disadvantages, alternatives to and consequences of the three sites still being considered.
- Vote on the three sites to narrow the field to two.

ROUND 3:

- Discuss the two sites, as above.
- Vote on which site group prefers.
- Prepare for final presentation, as teacher directs.

This workbook has a series of activities that you will complete during this project. Your teacher may provide additional activities and resources for you to use.

Identifying the Problem

When campaigning for or against any issue, the first thing to do is identify the problem. In this case, you must decide what the problems of having a landfill in your neighborhood are. Answer the following questions to gain a better understanding of how a landfill will affect your neighborhood.

If a landfill were located in my neighborhood, how would it affect:

the scenery around my home?

the amount of traffic on my street or road? (how important would this be if I had young children?)

the litter in my yard and along my street or road?

the smell in my area?

my neighbors?

my drinking water?

property values in the neighborhood?

how future residents might view the neighborhood?

Identifying the Problem

Looking at the list of concerns on the previous page. Place a check mark by those that you think are probable or most likely, rather than just possible or least likely. Which of these concerns are the most important to you? Why?

Not everyone in your neighborhood may have the same concerns. What are some of the reasons you may have different concerns?

If there are any other concerns you have that have not yet been mentioned, write them here. You will want to use these questions during your group sessions.

What Impact Will It Make?

Now that you have identified some issues you feel may affect your neighborhood, interview three of your adult neighbors. Ask them how they would react to the news that a site near their home might be used as a landfill. Use the following questions to gain the neighborhood's perspective on the possible landfill.

1. What is your first reaction?
2. What questions do I want answered before I will feel comfortable about having a landfill next door?
3. List all the potentially good things you can think of that might happen if a landfill would be located near your home.
4. List all the potentially bad things that might happen if a landfill would be located near your home.

Compare the answers you gave to the answers on page 5 and 6 to those people you interviewed. If you would like, you may add information to your own answers.

Many people have had to deal with a major change in their neighborhood – whether for a landfill site, new road construction, or a new school.

Often people's first reaction is to get mad. They don't like government making decisions that affect "their own back yard." During this anger stage, people sometimes think about drastic things to "get even."

Eventually, they may realize that anger won't get them anywhere. Once past the anger stage, people can start thinking about what they can do to:

- a. prevent the action from taking place,
- b. help find alternative solutions or
- c. try to reduce the negative impact as much as possible.

Dealing with Contaminated Water Supplies

Groundwater and surface water supplies can be contaminated by identifiable sources (known as *point-source pollution*), such as feedlots, leaching landfills or factories dumping waste into a lake or stream, and by unidentifiable sources (known as *nonpoint-source pollution*), such as nitrates, pesticides or acid rain. Prevention of contamination is the best way to assure safe drinking water supplies. However, once contamination has occurred, either the aquifer must be cleaned up, the contaminants must be removed by water treatment before it will be safe to use, a new drinking water source must be found, or the contaminates contained or restricted to a defined area of the aquifer and water not used from the aquifer.

The methods used to make the water safe will depend on several factors, including: the type and amount of contamination; the size of the area contaminated; the source of the contaminants (Where did they come from?); what technologies are available for the treatment of that contaminant (Can the contaminants be removed? How effective is the removal? How much does removing the contaminants cost?); and whether or not the contamination is likely to continue or recur.

The following articles help explain approaches to dealing with contaminated drinking water supplies — cleaning up the aquifer, treating the water before it is used, and finding an alternative water source.

Cleaning Up a Contaminated Aquifer

Contaminated aquifers can be cleaned up by several methods, but most will require lots of time and will be costly. Many of the methods involve pumping the water out of the aquifer, treating it, and either returning it to the aquifer, discharging it into surface water, or making some beneficial use of it (irrigating crops or parks). The method, cost, and feasibility of clean-up depend on the specific nature of the contaminant and the aquifer.

As an example, a portion of the aquifer used by one community was contaminated with carbon tetrachloride. The chemical had been used to control insects in a large grain storage facility every year for about 20 years. The storage facility was less than one-half mile from the city's well which was found to be pumping contaminated water. The city discovered the contamination 15 years after the use of the chemical was stopped.



Engineers knew that carbon tetrachloride could be removed by exposing the water to air. They knew the contamination would not happen again because the chemical was no longer being used. The Environmental Protection Agency determined that aquifer clean-up was required.

A facility was constructed that forced air through the water pumped from the contaminated aquifer. The carbon tetrachloride evaporated into the atmosphere, and the treated water was discharged to surface water. The construction and operation of the facility cost \$5 million. The operation needed to continue at least five years to remove the contaminant from the aquifer.

Alternative Source

A farming community in the central plains found their wells contaminated by high levels of nitrate. The community was in an agricultural area where corn was grown year after year. The community was located in an area where the soil was sandy and the water table shallow — that is, close to the soil surface.

Corn needs nitrogen in order to grow well. Often much of this nitrogen is provided by adding fertilizer to the soil.

In this area, excess nitrogen fertilizer and irrigation water were used over a period of years. As a result, some of the excess nitrate leached below the crop root zone. Since the soil was sandy and the water table shallow, the time required for the nitrate to reach the aquifer was relatively short. When it reached the aquifer, the drinking water of the towns and area farms quickly became contaminated.

In this area, there were two aquifers. The shallow aquifer was the only one contaminated by nitrate. After studying the situation, officials decided not to try to treat the contaminated water, but to drill new wells into the deeper aquifer and seal off the upper aquifer when drilling the new wells..

The decision to drill new wells was based on the same factors of expense, feasibility and probability of recurrence. However, in this case a) the nitrate contamination would have been very expensive to clean up, and b) some recontamination was almost certain to recur because of the continuing use of nitrogen fertilizers in the sandy soil, so a new source was located. If there were connections between two aquifers, drilling the new wells would not have been a feasible alternative.

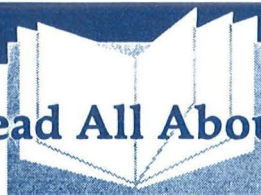
Treating Contaminated Water

Treating contaminated water requires careful consideration. First, the contaminant and its source or point of origin must be identified. Then, alternatives must be studied to find the most feasible solution.

A major factor in selecting a treatment method will be the initial cost and operating costs for the treatment system.

One small community whose drinking water supply exceeded EPA's nitrate maximum contaminant level drilled several test wells and could not find a water supply that met the nitrate standard. After evaluating treatment alternatives, the community installed an ion exchange system to remove nitrate. Only a portion of the water is treated. The treated water is mixed with untreated water to deliver water to the community that meets the standard. Since only a portion of the water is treated, the cost is not as great as if the entire supply was treated. The community raised water rates to pay for the purchase and operation of the treatment system.

Read All About It!



Recently there have been NUMEROUS examples of groundwater contamination. Using your library, your daily paper, your teacher and any other source you can think of, find at least two real-life stories of people or communities having to deal with groundwater contamination.

Photocopy the articles so you can refer to them when you prepare your arguments to your team.

Summarize your resources here and keep this sheet for easy reference when presenting arguments to your group.

Source/date (name of publication)	
Summary of Problem	
Similarities between story and my situation	

Example 1

Source/date (name of publication)	
Summary of Problem	
Similarities between story and my situation	

Example 2

Why a Landfill?

Every living thing on Earth generates solid waste. Because humans are able to create and manufacture consumer goods, we generate tons of waste beyond what is necessary for life itself.

What have you tossed today?

Starting tomorrow morning, write down all the waste material you throw away during a 24-hour period. Include the packages of any packaged items you have used even though it may not be empty yet (EXAMPLE: toothpaste containers, milk jugs, hairspray bottles, etc.).

What if we do nothing?

There are several examples of tragic consequences suffered when populations did not handle their solid wastes properly. What could be some of the consequences from mishandling solid waste?

Now list some of the consequences that would occur if your community decided to ignore its need for a sanitary landfill to handle its solid wastes.

Social:

Economic:

Environmental:

Political:

How are some ways you can reduce the amount of waste in your community?

Evaluating Our Progress after Round 1

Rate yourself on the following items with 5 being the best.

I was prepared for our meeting	5	4	3	2	1
I shared information that helped us evaluate the sites	5	4	3	2	1
I listened carefully to what others had to share	5	4	3	2	1
I asked questions to gain more information	5	4	3	2	1
When I didn't agree with someone, I did so in a friendly manner	5	4	3	2	1

What is one thing you can do next time to help the group function better ?

Answer the following questions as a group.

As a group, what are some things you all need to work on next time ?

What is the most important thing you accomplished in this round ?

What would you like to accomplish in the next round ?

Evaluating Our Progress after Round 2

Rate yourself on the following items with 5 being the best.

I was prepared for our meeting	5	4	3	2	1
I shared information that helped us evaluate the sites	5	4	3	2	1
I listened carefully to what others had to share	5	4	3	2	1
I asked questions to gain more information	5	4	3	2	1
When I didn't agree with someone, I did so in a friendly manner	5	4	3	2	1

(continued on page 13)

What is one thing you can do next time to help the group function better ?

Answer the following questions as a group.

What are some things you all need to work on next time ?

What is the most important thing you accomplished in this round ?

What would you like to accomplish in the next round ?

Evaluating Our Progress after Round 3

Rate yourself on the following items with 5 being the best.

I was prepared for our meeting	5	4	3	2	1
I shared information that helped us evaluate the sites	5	4	3	2	1
I listened carefully to what others had to share	5	4	3	2	1
I asked questions to gain more information	5	4	3	2	1
When I didn't agree with someone, I did so in a friendly manner	5	4	3	2	1

Answer the following questions as a group.

What is the most important thing you accomplished in this round ?

What do you feel the strengths of your group were ?

What do you feel the weakness of your group were ?

What other type of problems may you solve in the future using this same technique ?

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